



eBike Systems





YAMAHA

PW SERIES S2

YAMAHA
55mm
55mm

eBike systems

30 years of constant evolution

When Yamaha created the world's first production eBike back in 1993, few could have predicted the way the world of personal mobility would evolve over the next 30 years. The eBike has forever changed the way we live, work and play by providing a healthy, enjoyable and accessible way to move. And by offering a realistic alternative to other forms of transport, the eBike is playing an important part in the move to a carbon neutral world.

Innovation is central to Yamaha's philosophy, and since its formation in 1955 the company has constantly developed advanced new technology and radical new concepts that offer the customer an enhanced riding experience.

All new Yamaha PWseries S2 drive unit: Less is more
Each model in Yamaha's extensive range of eBike systems is designed to offer the ultimate feeling of rider-machine unity. Equipped with advanced technologies, including

Automatic Support Mode and Zero Cadence Technology, each PWseries drive unit delivers a very special riding experience that is like no other.

2023 sees the introduction of the new PWseries S2, an eBike system with increased torque, reduced weight and even smaller dimensions compared to the best-selling PWseries ST. Designed for universal sport and trail applications – and with a leading torque-to-weight ratio giving excellent acceleration – this compact low-noise drive unit offers a best-in-class specification that's close to the flagship PW-X3.

Also new for 2023 is Display B, a simple, durable and reliable system aimed at the leisure rider market that values a 'ready to go' design. With a central mount and large format display, this intuitive new design is the perfect partner for the PWseries S2.

Yamaha's accelerated carbon neutrality goal

eBike drive units are one example of the company's contribution towards making a better world, and as part of Yamaha's accelerated carbon neutrality goal for 2035 the production of PWseries models will relocate to the MBK Industrie's factory in France.

The move to a European manufacturing plant will play a major role in reducing Yamaha's carbon emissions by 92% between 2010 and 2035. With ISO 14001, for environment protection, and ISO 9001, for quality enhancement, certifications – MBK Industrie is ready to offer the highest levels of service to our EU customers.

Mountain Biking



PW-X3

85 Nm

Sports and Trail



PWseries S2

75 Nm

Trekking and Adventure



PWseries TE

60 Nm

Comfortable Commuting



PWseries CE

50 Nm

Daily City Ride

< Paved Road

Rough Terrain >

Core Rider >

< Casual Rider

Extensive Experience

Extensive experience in the eBike business verifies the Yamaha eBike System as a first class product. The World's first Power Assist Bicycle was sold in 1993.



Approved by technicians

Over the years, Yamaha has earned a reputation for high standard quality, offering eBike Systems with excellent reliability. Maintenance free: the unit needs no regular replacement of internal components. Ride far without the worries of not having your trusted technician nearby. Features excellent resistance to external factors and overheating. Just ride longer and enjoy a wide variety of landscapes.

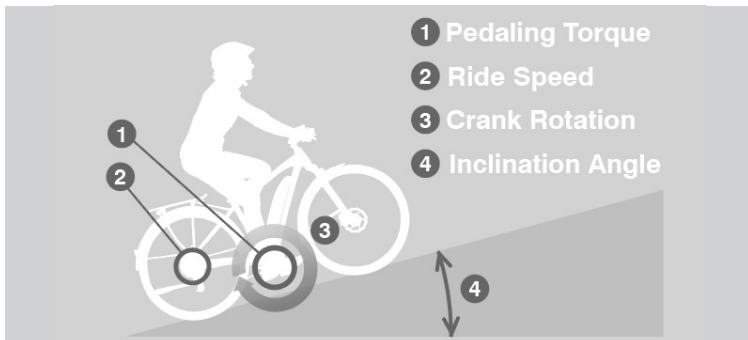


Intuitive operation and natural riding

Drawing from Yamaha's long history of engagement with motorsports, the assist setting know-how applied to Yamaha's eBike Systems provides a powerful yet natural and intuitive riding experience.

Sensing technology that supports your riding experience

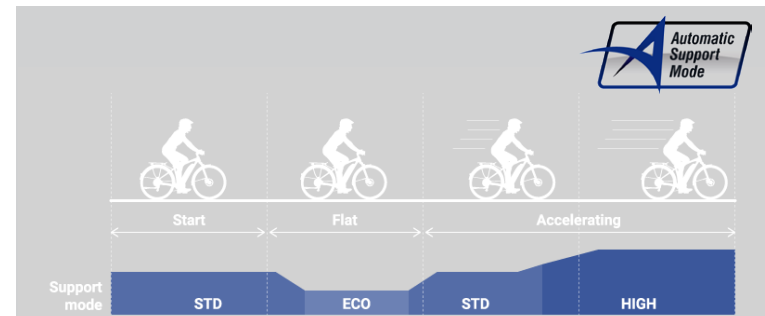
Based on its sensing technology, the system automatically detects riding conditions and delivers the appropriate assist power and acceleration.



Automatic Support Mode

The expression of Yamaha's tuning know-how in each riding scenario. Each of the sensors monitors the riding conditions, and algorithms automatically select the appropriate level of pedal assistance. The result is a fine-tuned, user-friendly ride.

The algorithms are created individually for each of the drive units on the line-up, creating the experience expected for each riding situation. If you wish to shift between assist modes manually, you can turn the Automatic Support Mode off. Feature available in all drive unit models.



Example of "Automatic Support Mode" application. Support mode changes automatically.



YAMAHA

PW SERIES S2

Drive Units

Less is More





PWseries S2 **NEW**

Developed with the simple philosophy that 'less is more', the new PWseries S2 is Yamaha's smallest, lightest and most powerful drive unit for the Sport and Trail sectors.

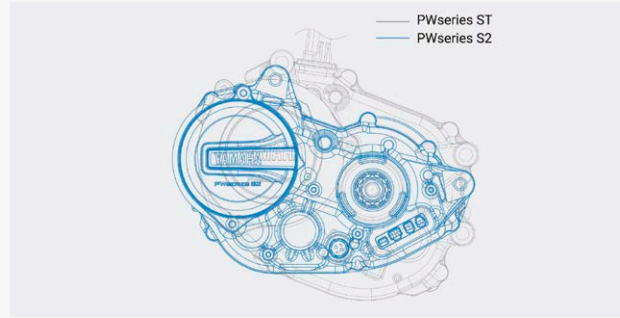
Building on the strengths of the best-selling PWseries ST, the PWseries S2 benefits from Yamaha-exclusive electronic control technologies that ensure strong performance with smooth and natural acceleration on every ride. And like every Yamaha drive unit, quality and reliability are assured.





Increased torque-to-weight ratio

Yamaha's engineers have worked tirelessly to make the PWseries S2 one of the most powerful and lightest drive units in its class. Producing 75 Nm of instant torque and weighing only 2.85 Kg, its torque to weight ratio is among the best in class.



Compact dimensions

As well as being lighter and more powerful, the PWseries S2 is also much more compact than the PWseries ST. Its overall dimensions are comparable to the flagship PWseries X3 model – giving Yamaha's partner bike manufacturers even greater freedom when developing the next generation of chassis designs.



Yamaha-exclusive electronic control technologies

With an extensive experience in e-Bike systems design and manufacture – combined with a motorsports heritage that goes back to 1955 – Yamaha is recognized as one of the leading innovators in electronic control technology. Benefitting from Automatic Support Mode and Zero Cadence technology, the PWseries S2 delivers an easy, enjoyable and intuitive e-Bike experience for every rider.



Improved pedalling efficiency and feel

PWseries S2 features a 22.8mm shorter bottom bracket than the PWseries ST, giving improved efficiency and feel for an extremely easy and enjoyable riding experience. A new ISIS bottom bracket axle interface delivers increased rigidity – and being fully compatible with a front double chainring, the compact new drive unit opens up greater possibilities for bicycle manufacturers.



Yamaha quality and reliability

Each Yamaha drive unit is designed to enable every owner to get the most fun and enjoyment out of their e-Bike on the street and trail. Developed with the benefit of 30 years' experience in the e-Bike business, the PWseries S2 drive unit is manufactured to the highest industry standards using premium materials and components.

PWseries S2 **NEW**



PWseries S2

Pure Ride





PW-X3

Yamaha takes its Pure Ride concept to the next level with the all-new PW-X3. Lighter, smaller with higher torque output than ever before, this drive unit delivers instant response for outstanding off-road performance.

The all-new PW-X3 is designed to deliver the purest ride and the most thrilling performance. With its lower weight, more compact size and higher torque output, the PW-X3 has the potential to open up many exciting new opportunities for e-MTB designers.





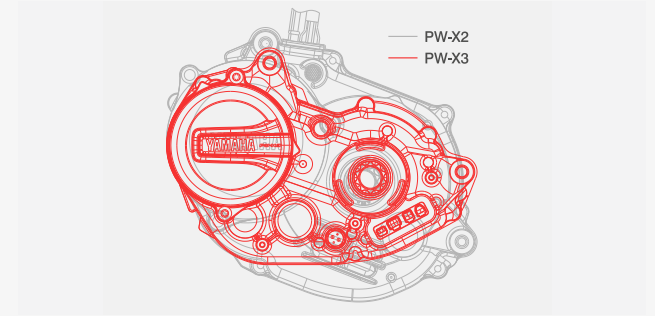
Increased torque

Producing maximum torque of 85 Nm, the PW-X3 is capable of tackling very demanding ascends. The distinctive Yamaha drive unit design enables instant support with sufficient torque immediately after pressure is applied to the pedal, not after certain crank turn.



Lighter than ever

Weighting just 2.75kg, the new PW-X3 is approximately 10% lighter than the previous model, giving an outstanding power to weight ratio for stronger performance and sharper handling.



More compact design

The new PW-X3 is approximately 20% smaller than the PW-X2 model, and its ultra-compact dimensions offer eBike manufacturers greater freedom to develop bikes for ideal frame geometry and suspension kinematics, as well as increased ground clearance.



Natural and agile response to pedalling

Right from the beginning, every PW-X series drive unit has featured the 128mm ISIS interface bottom bracket axle that gives the best Q-factor in any eBike system. Yamaha's Motor new PW-X3 continues with this idealized layout, making it especially attractive to riders.



Automatic Support Mode for E-MTB Ride

The PW-X3's exclusively tuned Automatic Support Mode delivers optimal assist different riding settings by choosing from Eco, Standard, and High-Performance Modes as conditions demand. The system reduces assist on level roads but boosts power on steep inclines to offer fine-grained assist feel that makes it seem like it's reading the rider's mind.



PW-X3



PW-X3

**The Pursuit
of Comfort**



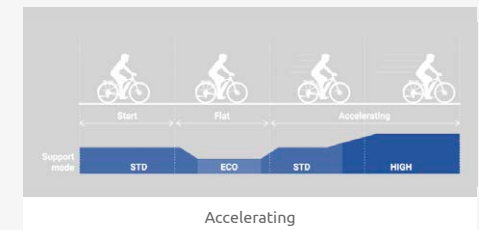
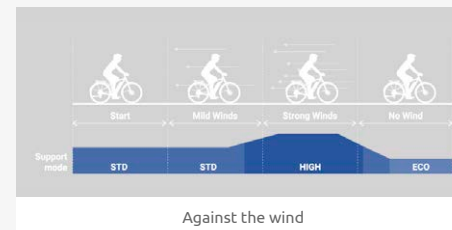
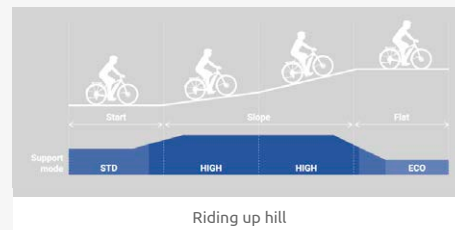
PWseries TE

The PWseries TE drive unit focuses on providing comfort and a stable ride in urban areas, coping effortlessly with riding conditions including steep climbs and rides against strong winds. Thanks to the Quad Sensor Technology, the system automatically detects riding conditions such as hill starts, and delivers the appropriate assist power and smooth acceleration



Comfort and a stable ride in the city

A drive unit with a focus on providing comfort and a stable ride in the city.



Automatic Support Mode for the ultimate comfort ride

The Automatic Support Mode exclusively tuned for the PWseries TE provides intelligent and natural power assistance with a lightweight feel, delivering a comfortable and enjoyable riding experience.

**Natural and
dependable ride**



PWseries CE

It just feels so natural!

Yamaha Motor focused the PWseries CE development efforts in the achievement of natural enjoyable ride.

Measures taken include: weight and noise reduction, implementation of the Automatic Support Mode and walk assist.

The unit delivers 50Nm of torque and allows the rider to experience all the advantages of an eBike. The PWseries CE was developed to tackle any aspect of city riding, offering ideal support in the flat town center and the hilly and windy village outskirts alike.

The PWseries CE is also compatible with "Coaster Brake".



Lightweight

The PWseries CE lightweight, starting at 2.9kg, adds to the unit's natural assist setting to provide an enjoyable ride. The rider should feel a light, swift handling while on the move and noticeable lightweight while pushing the bike around.



Automatic Support Mode

The quest for an ever more natural eBike ride goes beyond hardware improvements. The PWseries CE uses Yamaha Motor's extensive software setting know-how in its Automatic Support Mode. The system copes swiftly with constant changes in riding conditions – think of those upwind rides, and constant stops and starts for traffic lights – by automatically selecting the most appropriate support mode. The Automatic Support Mode also provides strong and smooth support for every start. It can be deactivated at the will of the rider.



Most quiet drive unit

Yamaha Motor strived to offer its most quiet drive unit to date, reducing noise significantly. With the PWseries CE, early morning rides in the park closest to you instantly become a relaxing nature-immersive experience.



Walk assist

Handling an eBike should not be a burden when you are off it. The renewed Walk Assist function in the PWseries CE comes in handy when pushing the bike, even up steep slopes or when the bike is carrying heavy loads.



The app used in this smartphone screen refers to the Komoot app.

Displays

Core/ Sports

Interface X



Core/ Sports

Display A

Display B **NEW**

Display C



Casual/Comfort ride



Display B **NEW**

Smart, easy and simple to operate

Featuring a simple, durable and reliable user interface, Yamaha's new Display B provides key information in large format via its centrally mounted 3 inches LCD meter, making it perfect to combine with all drive units.

Key Features

- Easy to use, easy to read
- 3 inches LCD centrally mounted screen
- Switch on and go
- Key information in large format
- English, German, French, Dutch, Italian and Spanish language options
- One touch removal



Switch on and go

For ease of use Display B saves previously selected settings such as ride assist mode or lights status (on/off) and can be removed from its cradle with one touch – or for added security it can be mounted with a bolt.



Smartphone friendly

Display B's centrally mounted location frees up plenty of handlebar space for a smartphone holder and allows power delivery through a USB micro-B 1 A port that helps prevent smartphone battery drainage when using energy-intensive apps including GPS.



Interface X

Featuring a minimalist, simple and ergonomic design, the new Interface X is an LED communication unit that allows users to enjoy every second of the ride.

Interface X mounts to the bike's stem, giving a cleaner look to the cockpit and handlebar area. Its remote switch features ergonomic mode selection buttons whose intuitive design enables the rider to concentrate on the track ahead – and colour coded assist mode indicator as well as a battery capacity indicator provide easy to read information.

Interface X features Bluetooth® Low Energy for smartphone connectivity through compatible apps like the e-Sync Connection. Additionally, ANT+™ connectivity feature makes Interface X compatible with cycle computers from brands like SIGMA, Garmin and Echowell.



Minimalistic LED communication unit

- Let riders concentrate on the ride
- Freedom to choose display (e.g. cycle computer, smartphone) via wireless communication
- Simple operation



Ergonomic remote switch

- Ergonomic design of most frequently operated buttons
- Nice coexistence with other components (with brakes, gear shifters, dropper seat levers)



Compact design

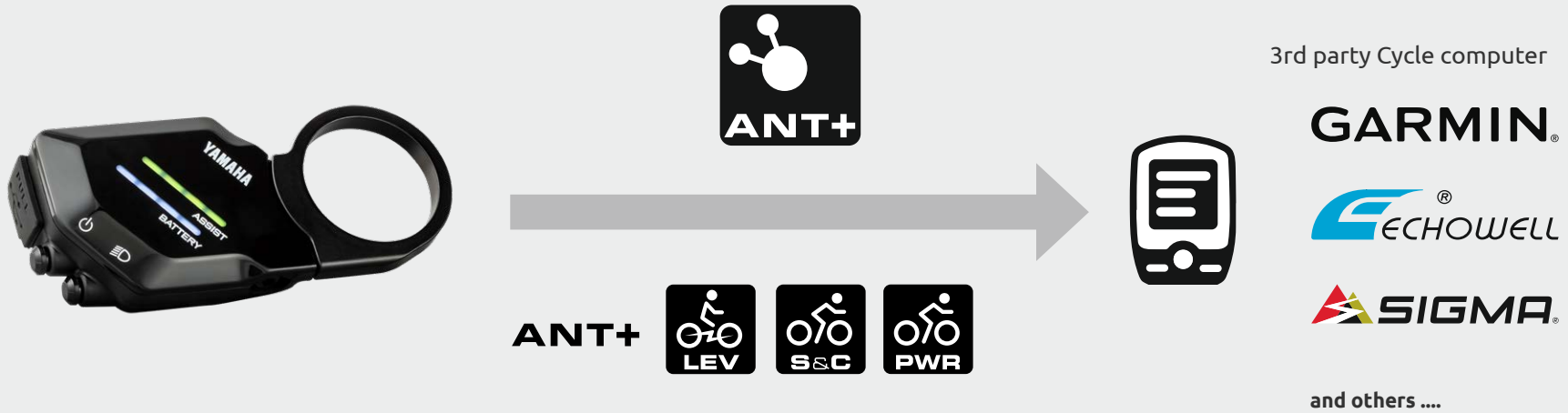
- Excellent blind operation let riders focus on the ride
- Clean Cockpit: Innovative mount system leaves a clean handlebar, leaving it free for lights, cycle computers, smartphone mounts, etc.



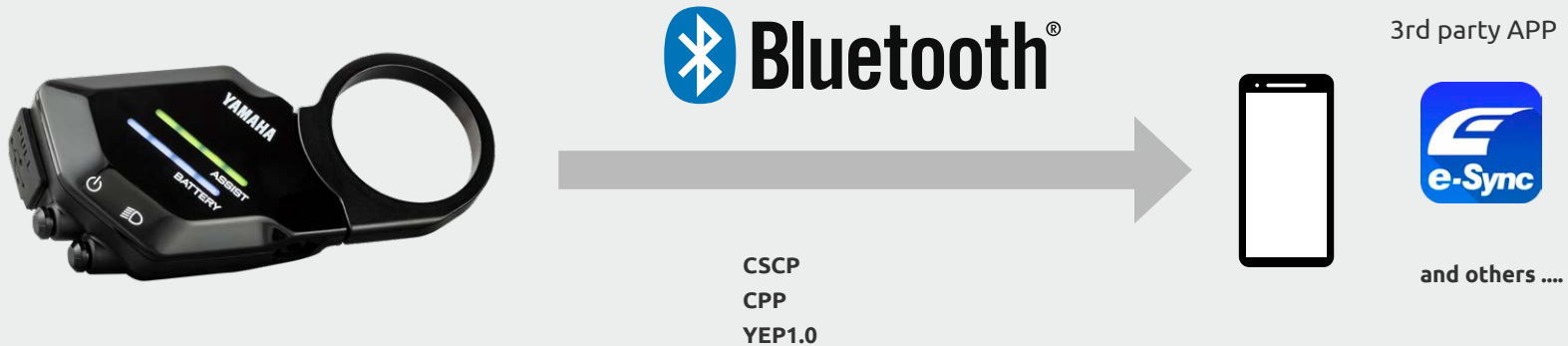
Connection with Cycle computer via ANT+

This product is ANT+™ certified.

Visit www.thisisant.com/directory for compatible products and apps.



Connection with Smart phone via Bluetooth® Low Energy Technology



Display C

The large 2.8 inch color dot matrix display

Provides clear read-outs and control of the connectivity functions. Several display screens are available for different modes. A newly-designed ergonomic remote switch improves ease of operation. By connecting your smartphone with the display you can enjoy extended features via the app. Display C takes enjoyment of your riding lifestyle to a new level.

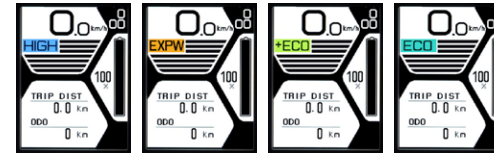
Support to Multiple Languages



Selectable Background Color



Clear information



Apps for enhanced functionality

To further enhance your riding lifestyle, the Display C can show additional information by communicating with specific applications. After downloading the app to your smartphone, and going through a simple set-up process, you can enjoy features including ride management, fitness tracking and map-based navigation.



Komoot
Turn by Turn Navigation
Different Routing
Offline Navigation



e-SYNC connection
Show detailed e-bike information on the app.



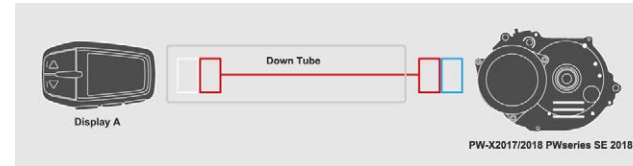
Display A

Designed for a wide range of uses

The Display A was designed for a wide range of uses, from city to trail riding. It features a simplified and easily operable large liquid crystal display, with speed and battery capacity functions. High importance has been placed on visibility while riding in severe environmental conditions. Support mode can be changed at the press of a button as you ride.

Retro Fit Kit

The Display A Retro Fit Kit enables the Display A to be fitted to all PW-X2017/2018 PWseries SE 2018 models.





Battery Pack & Battery Charger



BATTERY & CHARGER

The Battery Packs are designed to cater to a variety of bicycle types

Yamaha eBike Systems offers a full range of “Multi-Location” batteries with a compact, stylish shape that can be easily incorporated into the frame, offering a high degree of design freedom when mounting it inside the frame of a bike. In addition, the down tube and rear carrier mount type batteries are other long-selling options in our product line-up.

External Type



External Crossover Battery 500

- Watt-hour rating 500 Wh
- Voltage 36 V
- Charging time approx. 4.0 hrs
- Weight 2.9 kg



Down Tube Battery

- Watt-hour rating 500 Wh
- Voltage 36 V
- Charging time approx. 4.0 hrs (500 Wh)
- Weight 3.0 kg (500 Wh)



Rear Carrier Battery

- Watt-hour rating 500 Wh
- Voltage 36 V
- Charging time approx. 4.0 hrs (500 Wh)
- Weight 3.0 kg (500 Wh)

Concealed in the frame



Multi Location Battery 500

- Watt-hour rating 500 Wh
- Voltage 36 V
- Charging time approx. 4.0 hrs (500 Wh)
- Weight 3.0 kg

Battery Charger

- Input voltage 220-240 V
- Frequency 50 / 60 Hz
- Size 184 x 86 x 50 mm (791 cc)



This battery charger can be used by children aged from 8 years and above and persons with reduced physical, sensory or mental capabilities or lack of experience and knowledge if they have been given supervision or instruction concerning use of the battery charger in a safe way and understand the hazards involved. Children shall not play with the battery charger. Cleaning and user maintenance shall not be made by children without supervision.

If the power cable is damaged, stop using the battery charger and have it inspected at an authorized dealer.

Specifications



PW-X3



PW-X2 for Speed Pedelec



PWseries S2 **NEW**



PWseries TE



PWseries CE

Drive Units					
Rated voltage	36 V	36 V	36 V	36 V	36 V
Rated output	250 W	500 W	250 W	250 W	250 W
Max. assist speed	25 km/h	45 km/h	25 km/h	25 km/h	25 km/h
Max. drive torque	85 Nm	80 Nm	75 Nm	60 Nm	50 Nm
Weight	2.75 kg	3.1 kg	2,85 kg	3.4 kg	3.0 kg 2.9 kg (Coaster brake)



Interface X



Display C



Display B **NEW**



Display A

Displays				
Drive unit compatibility	Displays are interchangeable for all 2023 model year 25km/h drive units.			
Display type	Multicolor LED	2.8 inch TFT full color	3 inch LCD screen	1.7 inch LCD
Power supply	1,200mA (with PW-X3) 1,000mA (with other units)	1,000mA	1,000mA	N/A
Connectivity	Bluetooth® Low Energy Technology ANT+™	Bluetooth® Low Energy Technology	USB 2.0 Micro-B	N/A
Functionality (Always on)	Battery capacity indicator Assist mode indicator	Speedometer Battery capacity indicator Battery capacity (%) Assist mode indicator Assist power meter Clock	Assist mode indicator Speedometer Battery capacity indicator Automatic Support Mode indicator Clock Light indicator	Speedometer Battery capacity indicator Assist mode indicator
Functionality (Selectable)	Additional features available through smartphone apps or connected devices. ANT+™ profiles: LEV : Light Electric Vehicle S&C : Bike Speed & Cadence PWR : Bicycle Power	Average bicycle speed Maximum bicycle speed Trip meter Odometer Range (Remaining assist distance) Cadence Calorie Consumption Additional features available through smartphone apps or connected devices.	Trip meter Odometer Average bicycle speed Maximum bicycle speed Range Battery capacity (%) Cadence Trip time Supports six languages (English, German, French, Dutch, Italian, Spanish)	Trip meter Odometer Range (Remaining assist distance)



**External Crossover
Battery 500**



Down Tube Battery 500



Rear Carrier Battery 500

Batteries			
Voltage	36 V	36 V	36 V
Capacity	13.4 Ah	13.6 Ah	13.6 Ah
Watt-hour rating	500 Wh	500 Wh	500 Wh
Weight	2.9 kg	3.0 kg	3.0 kg
Approximate charging time	4.0 h	4.0 h	4.0 h



Multi Location Battery 500

Batteries	
Voltage	36 V
Capacity	13.4 Ah
Watt-hour rating	500 Wh
Weight	3.0 kg
Approximate charging time	4.0 h



PASC10

PASC9

Battery Chargers		
Output current	4 A	4 A
Voltage	220-240 V	220-240 V
Frequency	50/60Hz	50/60Hz
Approximate size	184 x 86 x 50 mm	184 x 86 x 50 mm
Compatible battery type	Down Tube Battery 500 Rear Carrier Battery 500	External Crossover Battery 500 Multi Location Battery 500

Safety Information

This battery charger can be used by children aged from 8 years and above and persons with reduced physical, sensory or mental capabilities or lack of experience and knowledge if they have been given supervision or instruction concerning use of the battery charger in a safe way and understand the hazards involved. Children shall not play with the battery charger. Cleaning and user maintenance shall not be made by children without supervision.

YeSS

Yamaha eBike Systems Service

Based on four key pillars – Technical Support, Warranty, Training, and Spare Parts – Yamaha eBike Systems Service (YeSS) is a comprehensive back up scheme that provides fast and effective support via locally-based teams.

Technical Support

By maintaining a close relationship with eBike Manufacturers – and understanding their specific needs to support Bicycle dealers – Yamaha's Technical Support teams ensure a fast and efficient back up. The Yamaha diagnostic tool offers Bicycle dealers the following features:

- Instant fault diagnosis
- Creation of Pre Delivery Inspection reports
- Create individual repair records and registrations
- Check latest error codes and technical data for eKit components
- Easy access to eBike repair manuals and parts books



Warranty

Yamaha's PW series drive units are among the most reliable systems available. If a warranty claim occurs the Technical Support teams are trained to respond quickly and keep parties involved fully informed at all times. The diagnostic tool can generate a diagnostic report which can be submitted to the eBike manufacturer together with a warranty request.

- Fast and efficient warranty service from initial claim to final approval
- Immediate access to every Yamaha eBike System specifications
- Component search function for drive units, displays, batteries and components



Spare Parts

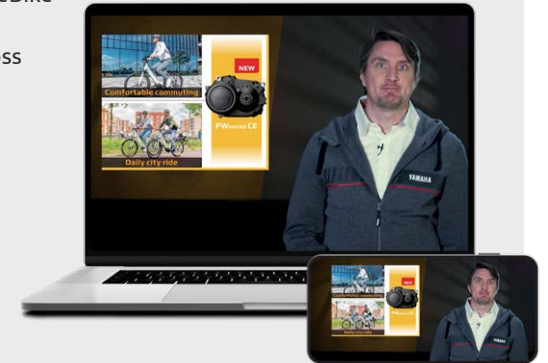
Yamaha is committed to offering one of the quickest and most efficient Spare Parts systems in the business. The company distributes parts and accessories throughout the whole of Europe from two strategically chosen locations in the Netherlands and France.

- Fast and efficient Spare Parts service
- 24-48 hours delivery
- Central Schiphol-Rijk location

Training

Yamaha has unrivalled knowledge in the design and manufacture of eBike Systems, and the Yamaha Motor Academy is continuously training dealers across Europe with a range of highly accessible and engaging online and physical courses. With a mix of on-the-job learning, entertaining e-learnings, co-operative interactions and conventional workshops Yamaha Motor Academy offers dealers a premium learning experience.

- Benefit from Yamaha's unrivalled eBike experience
- Continuously training dealers across Europe with the Yamaha Motor Academy
- Online and physical courses for Yamaha eBike System technicians
- Covering all aspects of eBike drive units, batteries, servicing and diagnostics
- 24/7 access to courses any time of the day or night via PC or Smartphone





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